

Embargoed until: 09:30 CET Paris time – 18 March 2021

Trends in India

Facts from the *Renewables in Cities 2021 Global Status Report*

Key Takeaways on Renewable Energy in 2020 in India

- In Asia, much of the city-focused activity occurred in India, where several “smart cities” have embraced renewables. In 2018, **Diu** Smart City became the country’s first city to operate on 100% renewable electricity.
- On-site generation of renewables in cities is picking up in India, in particular with solar PV.
- India launched a smart cities programme in 2015 to increase solar power generation capacity in urban areas, and some of these efforts have been coupled with the electrification of urban transport (part of the country’s Faster Adoption and Manufacturing of Electric Vehicles (FAME)-II in 2019-2020).

Brand new data shows:

- Only 13 cities in India had renewable energy targets and/or policies in 2020 (from a global total of over 1,300 cities). This covers however 67.6 million people, 18% of the urban population in India.
- Net-zero targets¹ are not as widespread in Indian cities. Only three cities in India set net-zero targets for 2050; **Kolkata** (2015), **Chennai** (2019) and **Delhi** (2020).

Renewable Energy Developments in Indian Cities

City renewable energy commitments and policies

- 8 cities in India have set renewable energy targets as of 2020.
- 9 cities in India have passed renewable energy policies as of 2020.
 - A municipal-level feed-in tariff (FIT) was introduced in **Rajkot**, Gujrat in 2019.
- Solar PV and solar water heater mandates are emerging in several cities:
 - **Rajkot** (India) has a mandate requiring solar PV rooftop systems on new buildings.
 - **Karimnagar** passed a regulation in 2019 making it mandatory for new buildings to install rooftop solar PV if the building area exceeds 2,700 square feet (251 m²).
 - In 2009, the municipal utility **Bangalore** Electricity Supply Company (BESCOM) started denying grid access to households that were not equipped with a solar water

¹ “Net-zero” emissions can be achieved, for example, by using natural sinks, such as reforestation or adopting agricultural best practices, or through a technological solution, such as carbon capture and storage. Net-zero targets also are referred to commonly as “climate-neutral”, “carbon-neutral” or “zero-emission” targets, although technically these are not the same. Carbon neutrality refers to net-zero emissions of only CO₂, whereas climate neutrality indicates a broader focus on net-zero emissions of all greenhouse gases. There is no agreed-upon definition, and implementation of these targets also varies broadly.

heater. This strict compliance rule led to 1,234 million m² of collector area installed across the city by 2017. BESCO's policy was copied by other utilities across **Karnataka**, making it the leading Indian state for solar water heater capacity.

- Targets supporting e-mobility are emerging: 6 e-mobility targets were set in 3 cities in India between 2018 and 2019 for EV registration in **Delhi** and for electric buses in **Delhi, Gurugram** and **Bangalore**.
 - **Delhi** set targets in 2019 for at least 500,000 EV registrations by 2024, and for delivery companies in the city to electrify 50% of their fleet by 2023 and 100% by 2025.
 - In 2019, **Delhi** approved its Electric Vehicle Policy, which among other measures requires all new residential and workplace parking to have EV charging spaces.

Scaling up renewables in buildings and transport

- Momentum is growing for the expansion of district cooling in the Indian cities of **Amaravati**, and **Rajkot**. **Amaravati** signed a concession to develop a district cooling system slated for operation in 2021 – **it is the first state capital in India to develop a district cooling system.**²
- Municipal procurement of renewables has spread rapidly in cities that face constraints to installing renewables within city limits, including in **Chennai** where methods for achieving renewable energy targets entail increasing procurement of renewable electricity or partnering with third-party operators to develop projects.
- On-site generation of renewables in cities is picking up in India: **Delhi** revised its solar policy in 2019, it introduced virtual net metering to allow residents and businesses to invest in solar energy systems. Solar PV installations on government and educational buildings totalled around 105 MW in 2019, with another 5 MW on residential buildings.
 - By the end of 2019, the industrial city of **Pune** had more rooftop solar capacity (130 MW) than any other Indian city.
- **Electrification of urban transport is picking up speed; some of this is linked to scaling up renewable power**
 - 800 electric buses were in circulation in the country in 2019. Several cities in India – including **Ahmedabad, Bengaluru, Delhi, Gurugam** and **Pune** – increased the number of electric buses in circulation due to procurement programmes launched in 2019 and 2020.
 - In 2019 and 2020, **Delhi** added to its existing e-mobility targets. **Delhi** also continued to promote the use of EVs by subsidising the installation of charging infrastructure within city boundaries.
 - To cover the electricity demand of their metros and trains, **Delhi** and **Nagpur** started to install their own distributed renewable power capacity or to purchase or contract for new or existing renewable capacity.

² With support from District Energy in Cities Initiative partners, Amaravati will assess ways to increase the environmental benefits of the project, including renewables, trigeneration and alternative refrigerants. From: <https://www.districtenergyinitiative.org/amaravati-will-be-indias-first-state-capital-have-district-cooling>

- In a small but growing number of cities, electric two- and three-wheelers are being charged using renewable energy. Solar-powered hybrid rickshaws started operating at the Indian Institute of Technology's **Delhi** campus in 2019.

Financing renewables in cities

- In India (2018), a municipal entity aggregates projects for third-party distributed PV developers and enables them to overcome barriers to accessing debt capital markets. Solar bonds in India are expected to lower costs by up to 12%, and the funds are disbursed via a public-private partnership.
- In 2015, the Indian government launched the 100 Smart Cities Mission, creating a new vision for the role of cities in renewable energy projects. Subsequently, around 100 cities in India created plans for investing in energy distribution and supply, including solar PV, waste-to-energy and wind energy (to a limited extent), as well as electric mobility.

Citizen engagement to achieve energy and climate goals

- In **New Delhi**, communities in the Dwarka neighbourhood trialled group net metering solutions in 2020 whereby surplus solar electricity is sold to neighbours rather than fed into the grid.

India's Energy Profile

<https://www.iea.org/countries/india>

Regional Trends: Asia

- The share of electricity production met by variable renewable energy sources (wind and solar PV) reached record levels in several markets during the year, including in China, and India.
- China and India account for most of the renewable energy investment in Asia. Investment in renewable energy capacity in India fell 14% in 2019, to USD 9.3 billion.
- Solar leasing (whereby developers or financing institutions cover the long-term leases for rooftop solar PV installations, and citizens then pay a periodic fee to use the generated power rather than having to invest in the system themselves) was first developed in the United States, but is diffusing rapidly, including across India and Malaysia in Asia.
- In Asia, growing concerns about air pollution and smog have driven public demand for renewable energy technologies and electric vehicles to improve public health.
- At least 78 municipal governments in Asia had adopted renewable energy targets and/or policies, most of which were in buildings and transport.
- Green hydrogen for transport also is garnering interest across Asia, with several cities having on-going or planned pilot projects.

Questions? Please contact press@ren21.net or +33 1 44 37 50 99.

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